

WE CLAIM:

1. A method for forming an integrated circuit structure,
comprising the steps of:
 - 5 providing a substrate having a semiconductor
surface;
forming an oxygen-containing layer on said
semiconductor surface;
forming a uniform nitrogen distribution throughout
10 said oxygen-containing layer; and
re-oxidizing said layer by a rapid anneal step in
[an oxidizer and hydrogen] a mixture of N₂O and
H₂ for stabilizing the nitrogen distribution [at
minimum oxidation rate], healing plasma-induced
15 damage, and reducing interfacial defect density.
2. The method according to Claim 1 wherein said oxygen-
containing layer is an ultra-thin silicon dioxide layer
in the thickness range from 0.6 to 2.0 nm.
3. The method according to Claim 1 wherein said oxygen-
20 containing layer is an oxynitride layer.
4. The method according to Claim 1 wherein said step of
forming an oxide is a rapid thermal oxidation.
5. The method according to Claim 1 wherein said anneal
steps comprise 5 to 60 s at 800 to 1050 °C in N₂O/H₂,
25 flowing at 1 to 20 standard liters/min at 2 to 50 Torr.
6. The method according to Claim 5 wherein said N₂O/H₂
mixture contains 0.5 to 30 % (preferred 1 %) H₂ with
the balance N₂O.
7. The method according to Claim 1 wherein said oxidizer
30 and hydrogen mixture comprises NO and H₂, or O₂ and H₂.
8. The method according to Claim 1 wherein said reduced

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